

EXHIBIT F



This Bluetooth Core Specification version 5.0 was amended on 2024-06-11 by the Bluetooth Core Specification Amendment: Core Configuration and Compliance Updates. The full text of the Amendment is appended to the end of this specification and begins [here](#).

The Amendment alters this specification by adding, deleting, and changing content as follows:

Added content

The appended amendment contains the following new part and section for this specification:

- A new part for Volume 0: [Part D Core Configurations](#)
- A new section for Volume 3, Part C: [Section 1.3 Gap Requirements](#)

Deleted content

- [Volume 0, Part B Bluetooth Compliance Requirements](#) is deleted in its entirety.
- [Volume 1, Part D Mixing of Specification Versions](#) is deleted in its entirety.
- [Section 2.5](#) of Volume 3, Part C *Generic Access Profile* is deleted in its entirety.
- [Section 1.2](#) of Volume 3, Part F *Attribute Protocol (ATT)* is deleted in its entirety.
- [Section 1.3](#) of Volume 3 Part G *Generic Attribute Profile (GATT)* is deleted in its entirety.

Changed content

- Volume 1, Part A *Architecture*
 - Affected Sections: [1.4](#); [2](#); [3.2.2](#); [5.2.1](#); [5.2.3](#); [5.2.4.2](#)
- Volume 1, Part B *Acronyms & Abbreviations*
 - Affected Section: [1](#)
- Volume 2, Part A *Radio Specification*
 - Affected Sections: [3.1.2](#); [3.2.2](#); [4.1.1](#); [4.2.1](#)
- Volume 2, Part B *Baseband Specification*
 - Affected Section: [A.7](#)
- Volume 2, Part C *Link Manager Protocol Specification*
 - Affected Sections: [3.2](#); [4.7](#)
- Volume 2, Part E *Host Controller Interface Functional Specification*
 - Affected Sections: [1](#); [1.1](#)
- Volume 2, Part G *Sample Data*
 - Affected content: [Cover page](#)
- Volume 2, Part H *Security Specification*
 - Affected Sections: [2](#); [4.6](#)
- Volume 3, Part A *Logical Link Control and Adaptation Protocol Specification*
 - Affected Section: [2.1](#)
- Volume 3, Part C *Generic Access Profile*
 - Affected Sections: [Foreword](#); [1.1](#); [2.2.2](#); [3.2.2.1](#); [3.2.2.1.1](#); [3.2.4.2](#); [6.4](#); [9.2.3.2](#); [9.2.4.2](#); [9.4.1](#); [13](#); [13.2](#); [14](#); [15.3](#); [16.2](#)
- Volume 3, Part D *Test Support*
 - Affected Section: [1](#)
- Volume 6, Part A *Physical Layer Specification*
 - Affected Section: [4.1](#)
- Volume 6, Part F *Direct Test Mode*
 - Affected Section: [1](#)



Bluetooth Core Specification

v 5.0

Master Table of Contents & Compliance Requirements

Specification of the **Bluetooth®** System

Specification Volume 0



Covered Core Package Version: 5.0
Publication Date: Dec 06 2016



Revision History

The Revision History is shown in the [Vol 0] Part C, Appendix.

Contributors

The persons who contributed to this specification are listed in the [Vol 0] Part C, Appendix.

Web Site

This specification can also be found on the official Bluetooth web site:
<https://www.bluetooth.org/en-us/specification/adopted-specifications>

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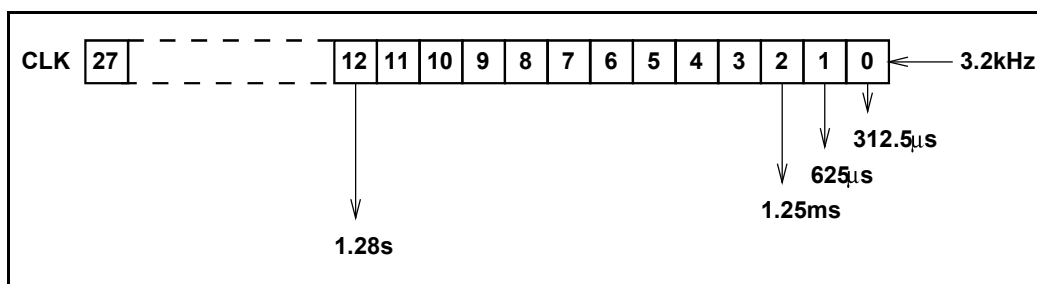


Figure 1.4: Bluetooth clock

In the different modes and states a device can reside in, the clock has different appearances:

- CLKR reference clock
- CLKN native clock
- CLKE estimated clock
- CLK master clock

CLKR is the reference clock driven by the free running system clock. CLKN may be offset from the reference clock by a timing offset. In STANDBY and in Hold, Sniff, and Connectionless Slave Broadcast modes the reference clock shall have a worst case accuracy of ± 250 ppm. In all other circumstances, it shall have a worst case accuracy of ± 20 ppm; this accuracy shall also be used by the piconet master device while performing Piconet Clock Adjustment (see [Section 8.6.10](#)).

See [Section 2.2.4](#) for the definition of CLK and [Section 2.4.1](#) for the definition of CLKE.

The master may adjust its native clock during the existence of the piconet within certain limits (see [Section 8.6.10.3](#)). The master may also perform a coarse adjustment of the native clock by using the LMP_clk_adj sequence.

1.2 BLUETOOTH DEVICE ADDRESSING

Each Bluetooth device shall be allocated a unique 48-bit Bluetooth device address (BD_ADDR). The address shall be a 48-bit extended unique identifier (EUI-48) created in accordance with section 8.2 ("Universal addresses") of the IEEE 802-2014 standard (<http://standards.ieee.org/findstds/standard/802-2014.html>).

Creation of a valid EUI-48 requires one of the following MAC Address Block types to be obtained from the IEEE Registration Authority:

- MAC Address Block Large (MA-L)
- MAC Address Block Medium (MA-M)
- MAC Address Block Small (MA-S)



See <http://standards.ieee.org/develop/regauth/index.html> for information on obtaining one of these MAC Address Blocks. See also the "Guidelines for 48-bit Global Identifier (EUI-48)" (<https://standards.ieee.org/develop/regauth/tut/eui48.pdf>) for a tutorial on creation of EUI-48 addresses.

Figure 1.5 illustrates how the LAP, UAP, and NAP map to the EUI-48. The bit pattern in Figure 1.5 is an example BD_ADDR.

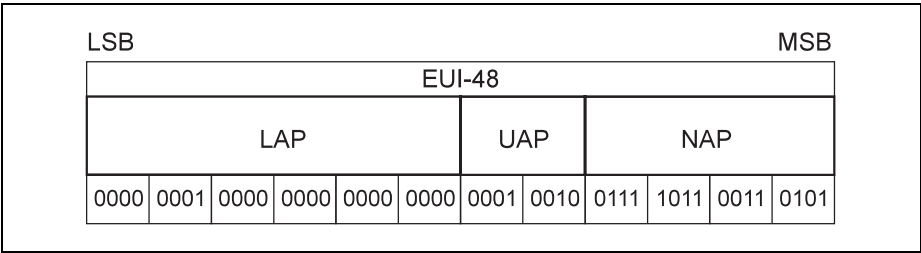


Figure 1.5: Format of BD_ADDR

The BD_ADDR may take any values except those that would have any of the 64 reserved LAP values for general and dedicated inquiries (see Section 1.2.1).

1.2.1 Reserved Addresses

A block of 64 contiguous LAPs is reserved for inquiry operations; one LAP common to all devices is reserved for general inquiry, the remaining 63 LAPs are reserved for dedicated inquiry of specific classes of devices (see Assigned Numbers). The same LAP values are used regardless of the contents of UAP and NAP. Consequently, none of these LAPs can be part of a user BD_ADDR.

The reserved LAP addresses are 0x9E8B00-0x9E8B3F. The general inquiry LAP is 0x9E8B33. All addresses have the LSB at the rightmost position, hexadecimal notation. The default check initialization (DCI) is used as the UAP whenever one of the reserved LAP addresses is used. The DCI is defined to be 0x00 (hexadecimal).

1.3 ACCESS CODES

In the Bluetooth system all transmissions over the physical channel begin with an access code. Three different access codes are defined, see also Section 6.3.1:

- device access code (DAC)
- channel access code (CAC)
- inquiry access code (IAC)

All access codes are derived from the LAP of a device address or an inquiry address. The device access code is used during **page**, **page scan** and **page response** substates and shall be derived from the paged device's BD_ADDR. The channel access code is used in the **CONNECTION** state,



3.2.2 Bluetooth Device Name (the user-friendly name)

3.2.2.1 Definition

This Section was amended on 2024-06-11 by the Bluetooth Core Specification Amendment: Core Configuration and Compliance Updates. See [page 0](#) for more information.

The Bluetooth device name is the user-friendly name that a Bluetooth device exposes to remote devices. For a device supporting the BR/EDR device type, the name is a character string returned in the LMP_name_res in response to an LMP_name_req. For a device supporting the LE-only device type, the name is a character string held in the Device Name characteristic as defined in [Section 12.1](#).

3.2.2.1.1 Bluetooth Device Name in a Device with BR/EDR/LE Device Type

This Section was amended on 2024-06-11 by the Bluetooth Core Specification Amendment: Core Configuration and Compliance Updates. See [page 0](#) for more information.

A BR/EDR/LE device type shall have a single Bluetooth device name which shall be identical irrespective of the physical channel used to perform the name discovery procedure.

For the BR/EDR physical channel the name is received in the LMP_name_res. For the LE physical channel the name can be read from the Device Name characteristic as defined in [Section 12.1](#).

Note: The Device Name Characteristic of the local device can be read by a remote device using ATT over BR/EDR if the local device supports ATT over BR/EDR.

3.2.2.2 Term on user interface level

When the Bluetooth device name is referred to on UI level, the term 'Bluetooth Device Name' should be used.

3.2.2.3 Representation

The Bluetooth device name can be up to 248 bytes (see [\[Vol 2\] Part C, Section 4.3.5](#)). It shall be encoded according to UTF-8 (therefore the name entered on the UI level may be restricted to as few as 62 characters if codepoints outside the range U+0000 to U+007F are used).

A device cannot expect that a general remote device is able to handle more than the first 40 characters of the Bluetooth device name. If a remote device has limited display capabilities, it may use only the first 20 characters.



15 BLUETOOTH DEVICE REQUIREMENTS

15.1 BLUETOOTH DEVICE ADDRESS

All Bluetooth devices shall have a Bluetooth Device Address (BD_ADDR) that uniquely identifies the device to another Bluetooth device. The specific Bluetooth Device Address requirements depend on the type of Bluetooth device.

15.1.1 Bluetooth Device Address Types

15.1.1.1 Public Bluetooth Address

A Bluetooth public address used as the BD_ADDR for the BR/EDR physical channel is defined in [Vol 2] Part B, Section 1.2. A Bluetooth public address used as the BD_ADDR for the LE physical channel is defined in [Vol 6] Part B, Section 1.3.

15.1.1.2 Random Bluetooth Address

A random device address used as the BD_ADDR on the LE physical channel is defined in Section 10.8.

15.2 GATT PROFILE REQUIREMENTS

The requirements for supporting a GATT Client or GATT Server are specified in Table 15.1.

	BR/EDR GAP Role	LE Broadcaster	LE Observer	LE Peripheral	LE Central
GATT Client	O	E	E	O	O
GATT Server	C1	E	E	M	M
C1: Mandatory if the GATT profile is supported on the BR/EDR physical transport; otherwise excluded					

Table 15.1: Requirements based on GAP Roles Supported